

I can apply the law of detachment and the law of syllogism in logical reasoning.

Common Core

CC.9-12.G.CO.9 Prove theorems about lines and angles.

CC.9-12.G.CO.10 Prove theorems about triangles.

CC.9-12.G.CO.11 Prove theorems about parallelograms.

CC.9-12.G.SRT.4 Prove theorems about triangles.

1. What is deductive reasoning?

Refer to example 1 on page 88.

2. Guided Practice: There is a myth that an eelskin wallet will demagnetize credit cards because the skin of the electric eels used to make the wallet holds an electric charge. However, eelskin products are not made from electric eels. Therefore, the myth cannot be true. Is this conclusion a result of inductive or deductive reasoning?

In deductive reasoning, if the given facts are true and you apply the correct logic, then the conclusion must be true.

Law of Detachment

If $p \rightarrow q$ is a true statement and p is true, then q is true.

Refer to example 2 on page 89.

3. Guided Practice: Determine if the conjecture is valid by the Law of Detachment. Given: If a student passes his classes, the student is eligible to play sports. Ramon passed his classes.

Law of Syllogism

If $p \rightarrow q$ and $q \rightarrow r$ are true statements, then $p \rightarrow r$ is a true statement.

Refer to example 3 pages 88 and 89.

- 4. Guided Practice: Determine if the conjecture is valid by the Law of Syllogism. Given:** If an animal is a mammal, then it has hair. If an animal is a dog, then it is a mammal.

Refer to example 4 on page 90.

- 5. Guided Practice: Draw a conclusion from the given information. Given:** If a polygon is a triangle, then it has three sides. If a polygon has three sides, then it is not a quadrilateral. Polygon P is a triangle.

2.3 Assignment: (pp 91-92) 10, 11, 13, 16, 18-20.

	Deductive Reasoning	Inductive Reasoning
Premises	Stated as <u>facts</u> or general principles ("It is warm in the summer in Spain.").	Based on <u>observations</u> of specific cases ("All crows Knut and his wife have seen are black.").
Conclusion	Conclusion is more <u>special</u> than the information the premises provide. It is reached directly by <u>applying logical rules</u> to the premises.	Conclusion is more <u>general</u> than the information the premises provide. It is reached by <u>generalizing</u> the premises' information.
Validity	If the premises are true, the conclusion <u>must be true</u> .	If the premises are true, the conclusion is <u>probably true</u> .
Usage	More difficult to use (mainly in logical problems). One needs <u>facts</u> which are definitely true.	Used often in everyday life (fast and easy). <u>Evidence</u> is used instead of proved facts.